



Place of Death among Cancer Patients in Brunei: A Retrospective Study

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Abstract

Background: End of life and palliative care remains less popular and underdeveloped in many countries. Palliative care services have been proven to facilitate preference towards good death. The present study aimed to determine patterns and factors associated with place of death in Brunei Darussalam.

Methods: This retrospective study was conducted in 2016 on all cancer deaths (n=801) recorded on the registry of death records in Brunei Darussalam. Data including sociodemographic characteristics and place of death were extracted from the medical records. Statistical analysis of data was done in SPSS 16 using binary logistic regression analysis at significance level of 0.05.

Results: The overall number of cancer deaths increased from 171 in 2013 to 320 in 2015. The highest number of cancer deaths was recorded among those aged 50-59 (31%), 60-69 (22.6%), and 50-59 years (24.7%) in 2013, 2014, and 2015, respectively. Age and living in Temburong district significantly associated with the place of death (P<0.05).

Conclusion: The location of specialized care settings associated with place of death among cancer patients. Our results may have important implication for development of specialized palliative and supportive care for end of life care.

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Highlights:

What is current knowledge?

Place of care plays an important role in determining place of death however; there is difficulty of allowing preferred place of death at last days of life leading most deaths at the hospitals

What is new here?

Majority of the cancer subjects died at the hospital however, home deaths are on the increase and gaining more preference

Introduction

The cancer epidemic has become a public health concern with increased trend in cigarette smoking and obesity as major risk factors for cancer worldwide (1). Over 82% of all deaths in Brunei were attributed to non-communicable diseases (NCDs) alone in 2011 with cancer as the leading cause of death (2). Cancer patients often experience significant physical, emotional, spiritual, and social distress in the final hours/days of life. Quality care at last days of life evidently includes determining the place of death i.e. home or hospital (3, 4). The thought of dying is stressful itself that can be moderated by choosing the preferred place of death (5).

However, strong evidence shows that this often results in death of patients in hospitals (6, 7). Moreover, type of illness could influence place of death. Furthermore, exorbitant end-of-life care in hospital often leads to patients care at home (8, 9). Therefore, it has become an important policy to support death outside hospitals in many regions (10). The majority of patients prefer to spend their final hours of life at home although hospital remains the most common place of death in many countries (11). In this study, we evaluate the trends, patterns, and factors associated with place of death in Brunei Darussalam.

Methods

This retrospective study was performed on secondary data obtained from death registry, department of Immigration, Ministry of Home Affairs, Brunei Darussalam. The study population consisted of all cancer patients (n=801) who died during 2013-2015. Ethical approval was obtained from the Institute of

Health Research Ethics Committee (ISHREC), University of Brunei Darussalam. The subjects' data including gender, age, place of residence, nationality, race, ethnicity, place of death, and year of death were extracted from the Department of Immigration, Ministry of Home Affairs, where birth and death records for Brunei Darussalam are kept.

The collected data were entered into the SPSS (version 16). Binary logistic regression analysis was used to determine statistically significant differences. Data analysis was carried out at statistical significance level of 0.05.

Results

The overall number of cancer deaths increased from 171 in 2013 to 320 in 2015. The highest number of cancer deaths was recorded among those aged 50-59 (31%), 60-69 (22.6%), and 50-59 years (24.7%) in 2013, 2014, and 2015, respectively. Cancer deaths were more frequent in district of Brunei Muara. As expected, cancer deaths were more frequent among Brunei patients and those of Malay ethnicity (Table 1 and Figure 1).

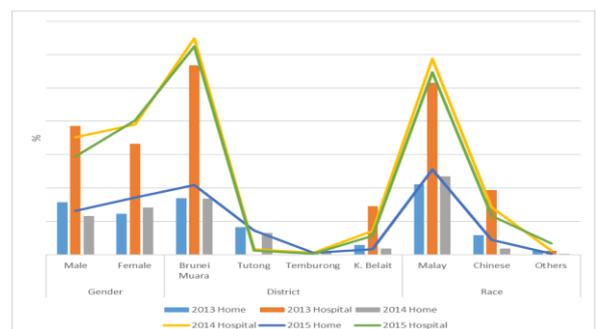


Figure 1: Trends of cancer deaths in Brunei Darussalam during 2013-2015 according to the sociodemographic characteristics of the cancer patients

Table 1. Frequency of death based on demographic characteristics during 2013-2015

	N=171	N=310	N=320
Age (Years)	2013, N (%)	2014, N (%)	2015, N (%)
<10	3(1.8)	2(0.60)	1(0.3)
10-19	0(0.0)	4(1.30)	2(0.6)
20-29	2(1.2)	4(1.30)	7(2.2)
30-39	4(2.3)	14(4.5)	17(5.3)
40-49	18(10.5)	40(12.9)	34(10.6)
50-59	53(31.0)	58(18.7)	79(24.7)
60-69	35(20.5)	70(22.6)	75(23.4)
70-79	34(19.9)	67(21.6)	66(20.6)
80-89	18(10.5)	39(12.6)	35(10.9)
≥90	4(2.3)	12(3.9)	4(1.3)
Gender			
Male	93(54.4)	145(46.8)	136(42.5)
Female	78(45.6)	165(53.2)	184(57.5)
Districts			
Brunei Maura	126(73.7)	253(81.6)	267(83.4)
Tutong	14(8.20)	25(8.10)	27(8.40)
Temburong	0(0)	4(1.30)	3(0.90)
Belait	31(18.1)	28(9.0)	23(7.20)
Nationality			
Brunei	131(76.6)	254(81.9)	277(86.6)
Malaysia	17(9.90)	26(8.4)	22(6.90)
Indonesia	0(0)	2(0.60)	1(0.30)
Philippines	1(0.60)	1(0.30)	2(0.60)
Others	22(12.9)	27(8.70)	18(5.60)
Race			
Malay	124(72.5)	255(82.3)	257(80.3)
Chinese	43(25.1)	50(16.1)	51(15.9)
Others	4(2.40)	5(1.60)	12(3.70)

As shown in figure 2, hospital deaths were more frequent among cancer patients during the study period. However, older individuals were more likely to die at home compared to patients aged <39 years (P=0.003) (Table 2).

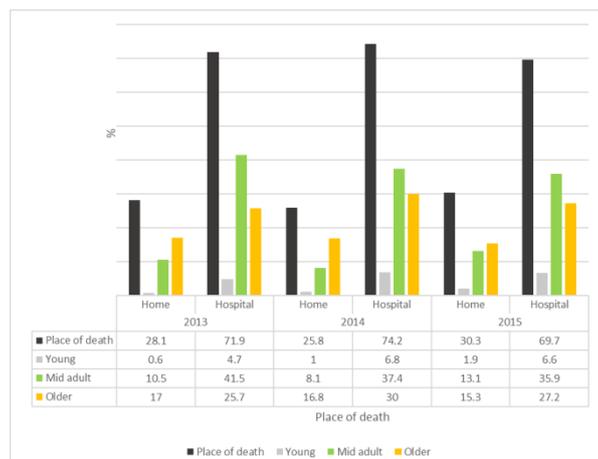


Figure 2: Relative frequency of death based on place of death and age in Brunei Darussalam during 2013-2015

Table 2. Associated factors with place of death using the binary logistic regression

Variables	Simple Logistic regression			Multiple Logistic Regression		
	Expβ ^a	95% CI	P value	Expβ ^a	95% CI	P value
Age (years)						
Younger adults	2.9	(1.423, 5.917)	0.003	2.90	(1.423, 5.917)	0.003
Middle age adults	2.06	(1.492, 2.849)	0.001	2.06	(1.492, 2.849)	0.001
Older adults	Ref			Ref		
Sex						
Male	1.001	(0.735, 1.364)	0.993	1.021	(0.729, 1.430)	0.905
Female	Ref			Ref		
Districts						
Brunei Maura	Ref			Ref		
Tutong	0.798	(0.433, 1.471)	0.470	0.856	(0.461, 1.590)	0.623
Temburong	0.037	(0.015, 0.093)	0.001	0.040	(0.016, 0.101)	0.001
Belait	0.395	(0.123, 1.272)	0.120	0.389	(0.120, 1.430)	0.115
Race						
Malay	0.548	(0.182, 1.651)	0.285	0.451	(0.129, 1.575)	0.212
Chinese	0.894	(0.280, 2.855)	0.850	0.653	(0.176, 2.218)	0.523
Others	Ref			Ref		

Dependent variable = Place of death, a: Expβ= Odd Ratio

Discussion

The present study evaluated trends of death, place of death and sociodemographic characteristics of cancer patients in Brunei during 2013-2015. Based on the results, the majority of cases died at hospitals; however, the number of home deaths increased during the study period. Cancer deaths were more prevalent among those living in the capital city (Brunei Maura) compared to other districts. A steady increase in hospital deaths was observed among the Chinese and Malay Bruneians; with majority of the cancer deaths recorded

among Malay Bruneians. In contrast, a study in Singapore revealed that the frequency of cancer deaths was lower among Malays compared to their Chinese counterpart (12). In the mentioned study, age and cancer subtype were significantly associated with place of death. The rising prevalence of cancer-related deaths among middle-aged individuals is well documented (10, 13).

Based on our findings, the proportion of cancer deaths among males reduced over the study period from 54.4% in 2013 to 42.5% in 2015. Meanwhile, the number of cancer deaths among females increased from 43.6% in 2013 to 57.5% in 2015. In this regard, the Brunei National Health and Nutritional Statistics indicated that the frequency of NCDs-related deaths was higher among females (54.4%) compared to males (50.8%) in 2012 (11).

According to the Ministry of Health Information Booklet, Malays constitute for about 66% of the total Brunei population, while Chinese and other ethnicities constitute for 10% and 24% of the Brunei population, respectively (14). As expected, the number of cancer deaths was highest among Malay Bruneians. The frequency of cancer deaths among these subjects was 72.5% in 2013 and 80.3% in 2015. However, the frequency of cancer deaths among Chinese Bruneians declined from 25.1% in 2013 to 16.1 in 2015.

Our findings indicate that prevalence of cancer deaths at home gradually increased from 25.8% in year 2014 to 30.3% in year 2015. Similar increasing trends were observed in other countries (15, 16). For example, a retrospective study in Singapore reported an increased trend in the number of home deaths from 28.9% in 2000 to 39% in 2010 (16). Similarly, in England and Wales, the number of home deaths increased from 18.3% in 2004 to 20.8% in 2010 (17).

Surprisingly, little is known about the preferred place of death and specialised palliative care services in Brunei Darussalam. Palliative care at home generally increases the chance of home deaths (18, 19). A longitudinal study on patients with posttraumatic stress in the USA reported that the quality of life in the final hours of life was higher among patients cared for at the hospital (21.1%) compared to those cared for at home (4.4%) (20).

Dying at home and in the presence of loved ones increases patients' comfort and help reduce emotional and spiritual distress as well as physical suffering. The choice of dying at home is associated with untimely care, increased need for hospital transfer and admission, and poor patient-physician relationship (21, 22). Similarly, a study in Japan among terminally ill cancer patients indicated that patients with no preference to die at home will eventually die at the hospital (23). Furthermore, choosing the place of death relies on the severity of disease and disability (24).

This is the first study to evaluate place of death among deceased cancer patients in Brunei Darussalam. However, the study had some limitations which are discussed below.

Firstly, the source of data in this study might have influenced the quality of the data. Secondly, death registration was done by non-clinical administrators who might have put less patients' details. It is recommended to conduct large cohort studies for time span of 5 to 10 years in order to provide more details information regarding the trends of deaths among cancer patients.

Conclusion

Based on the results, age is the most important sociodemographic variable associated with place of death among cancer patients. Home deaths are becoming more prevalent among older patients and in more populated areas such as the Brunei Maura. The findings also suggest that the location of specialised care settings influences place of death among cancer patients. Our results may have important implication for development of specialized palliative and supportive care for end of life care.

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Ethical statement

Formal approvals were obtained from Institute of Health Research Ethical Committee (ISHREC) Universiti Brunei Darussalam (UBD/HIS/B3/8) and Department of Immigration

Conflict of interest

The authors declare that there is no conflict of interest regarding publication of this article

Author contributions

Design, instrumentation, methodology, data analysis and management, manuscript writing^{OOE}
 Design, instrumentation, supervision and editorial^{VM}
 Data collection, supervision and editorial^{AAT}

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